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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/649,958	08/29/2000	Shinji Kimura	ASA-920	7131

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EXAMINER

PATEL, ASHOKKUMAR B

ART UNIT	PAPER NUMBER
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2127

DATE MAILED: 10/30/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/649,958

Applicant(s)

KIMURA ET AL.

Examiner

Ashok B. Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 6
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Application Number 09/649,958 was filed on 08/29/2000, which is a continuation in-part of application serial no. 09/151,270 filed 09/11/1998. Claims 1-8 are subject to examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Solomon (US 6,269,409) in view of Kuwatsuru et. al. (hereinafter Kuwatsuru) (JP363311442A).

4. Referring to claim 1, Solomon teaches incorporating a processing procedure common to plurality of operating system (Software Abstraction Layer (SAL), 320, Fig.3) as a device driver of first operating system (SAL provides an interface to execute an operating system, such as operating system 314 as a task under operating system 306, Fig.3 and col. 4, lines 4-6.) Solomon also teaches arranging SAL in an area shared by plurality of operating systems, 803, Fig.8 and 903, Fig.9. Solomon also teaches clearing interrupt processing of first operating system (Unix 606, Fig.6) by storing the interrupt information in a data structure 610 and, reporting to SAL that an interrupt has

occurred for the second operating system, Col.5, lines 6-21, and Fig. 6. Then, SAL sends a call to second operating system for interrupt processing, col.5, lines 22-33, 808, Fig.8, without changing a processing procedure of first operating system. Solomon teaches as described above to load a second operating system into computer by means of device driver (executing an operating system 314 as a task under operating system 306, col.4, lines 4-6) and to start second operating system in a virtual space different from first operating system (Fig. 5, 508). Solomon does not teach an interrupt processing unit for common processing procedure. Kuwatsuru teaches providing plural OSs on a single computer and adding a function to one of the two OSs to utilize an interrupt processing program of the other OS so that the interruption processing is ensured with the other OS with the proper functions of both OSs kept available, ABSTRACT. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to modify Solomon's SAL by adding and enhancing with modifications to Kuwatsuru's function of utilizing the interrupt processing programs, thereby achieving common processing procedure with an interrupt processing unit functioning to handle, that is to schedule and clear, the interrupts of operating systems without changing a processing procedure of first operating system. Because, once the interrupt processing unit for common processing procedure is in place the interrupt processing of the operating systems are managed as desired.

5. Referring to claims 2 and 3, Solomon teaches the use of the first operating system's interrupt trapping function used as a common interrupt processing unit by

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storing an interrupt information in a data structure 610, Fig. 6, col.5, lines 6-43, even though the interrupt belongs to second operating system. Solomon also teaches interrupt detection ability of SAL, Fig.8, 806, and interrupts reporting ability of SAL to second operating system. As indicated above, Solomon does not teach an interrupt processing unit for common processing procedure. Kuwatsuru teaches of adding a function to one of the two OSs to utilize an interrupt processing program of the other OS so that the interruption processing is ensured with the other OS with the proper functions of both OSs kept available, ABSTRACT. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to modify Solomon's SAL by adding Kuwatsuru's function of utilizing the interrupts processing programs and enhancing with modifications such as interrupt detecting and reporting to an appropriate operating system to achieve common processing procedure with an interrupt processing unit functioning to detect and report the interrupts to the appropriate OSs. Because, this modifications will allow the interrupt resources to be accessed prevented from accessing once they are reserved by one operating system or, made available to one operating system once cancelled from reservation by other operating system.

6. Referring to claim 4, Solomon teaches interrupt detection, interacting and transferring of calls and requests for data between operating systems occurring in a region of shared memory area; common processing procedure, 803(SAL), Fig.8 and 618, Fig.6, and keeping in mind the teachings of Kuwatsuru as described above, it

would have been obvious to one having ordinary skill in the art at the time of invention was made to modify Solomon's SAL and combine with Kuwatsuru's function of utilizing the interrupts processing programs with enhancements cited in the above paragraphs, and store in the shared memory such that they are coincident. Because common processing procedure and common data are thereby made interactive with the plurality of operating systems.

7. Referring to claim 5, Solomon teaches incorporating a processing procedure common to plurality of operating system (Software abstraction layer (SAL), 320, Fig.3) as a device driver of first operating system (SAL provides an interface to execute an operating system, such as operating system 314 as a task under operating system 306, Fig.3 and col. 4, lines 4-6.) SAL also has an interrupt detecting (806, Fig.8), reporting (808, Fig.8), calling to request status of interrupt device (814, Fig.8), providing register data (820, Fig.8), calling to clear an interrupt (830, Fig.8). In addition to keeping in mind the teachings of Kuwatsuru as described in the above paragraphs, Kuwatsuru also teaches "an interruption vector generator 4 gives an interruption to an OS2 for interruption in a state where the OS2 and an OS3 are executing the processes of a task 7 and a task 8 respectively. Under such conditions, an interruption processing call part 1 calls out an interruption processing program 6 of the OS3 and performs the interruption processing to the OS2. While the task 7 receives the interruption service peculiar to the OS2. Meanwhile the OS3, i.e., the owner of the program 6 receives the information of

the interruption processing and continues the task 8 with no stop. When the program 6 is ended in the OS2, the OS2 carries out again the task 7 based on the original interruption program 5. Thus coexistence is possible with both OSs without deteriorating their processing functions with each other even with the processing progressed by interruptions.", CONSTITUTION and 4, Fig.1. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to combine Solomon's interrupt detecting, reporting and calling to request status of interrupt device and providing register data with Kuwatsuru's interruption vector generator to extract the address information of an error (interrupt) function of a function group of an operating system. Because, once the error (interrupt) occurs in an operating system, it's location is detected and reported to the interrupt processing unit for common processing procedure, it is assigned to one uninterrupted operating system (monitoring operating system) to perform diagnosis or recovery of the failure in the operating system that was being monitored as taught by Kuwatsuru.

8. Referring to claims 6 and 7, Solomon teaches incorporating a processing procedure common to plurality of operating system (Software abstraction layer (SAL), 320, Fig.3) as a device driver of first operating system (SAL provides an interface to execute an operating system, such as operating system 314 as a task under operating system 306, Fig.3 and col. 4, lines 4-6.) Solomon teaches arranging SAL in an area shared by plurality of operating systems, 803, Fig.8. Thus, Solomon teaches Multi-OS management program and, interacting and transferring the data between operating

systems is stored in a shared memory area, 803(SAL), Fig.8 and 618, Fig.6. Solomon does not teach an interrupt processing unit for common processing procedure.

Kuwatsuru teaches of adding a function to one of the two OSs to utilize an interrupt processing program of the other OS so that the interruption processing is ensured with the other OS with the proper functions of both OSs kept available, ABSTRACT.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to modify Solomon's SAL by adding Kuwatsuru's function of utilizing the interrupt processing program of an operating system to switch the executions of Solomon's SAL and other operating system. Because the execution switching between Multi-OS management program and operating systems will allow it to be coincident in virtual address spaces of both OSs.

9. Claim 8 is a claim to a storage medium for storing the method of claim 6.

Therefore, claim 8 is rejected for the reasons set forth above paragraph 4 for claim 6.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ashok B. Patel whose telephone number is (703) 305-2655. The examiner can normally be reached on 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William A Grant can be reached on (703) 308-1108. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

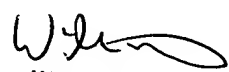
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746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.


abp

October 2, 2003


WILLIAM GRANT
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100
10/14/03